NOTES.

A STRIKING example of the utilisation of waste products was given by Mr. Forster, the Financial Secretary to the War Office, in the House of Commons on March 1. The waste product in question was fat. Everybody knows now that glycerine is obtained from fat, even if in the early days of the war this fact was new to certain of our officials whose education had, presumably, been exclusively classical, and who were therefore unaware that there was any connection between the supply of fat and the production of explosives. Beef of medium leanness contains on an average about 20 per cent. of fat, calculated upon the edible part of the joints; mutton and pork contain about 30 per cent. On heating these fats with a solution of alkali, the glycerides of which they consist are decomposed, yielding glycerine and soap. Theoretically, the pure fats should give glycerine equal approximately to 10·8 per cent. of their weight. Formerly meat scraps and other table refuse at the military camps were either destroyed or else sold for a small sum; but the authorities now have these remnants collected and sorted, in order that the fatty portions may be used for the making of glycerine. Special plants have been erected for this purpose, one in this country and one in France, and others are shortly to be installed. It was stated that the present rate of output of glycerine from the food of the troops is 1000 tons annually, and that this quantity provides propellant explosive charges for approximately twelve and a half millions of 18-pounder shells. The War Office sells the glycerine to the Ministry of Munitions for 50*l*. a ton, whereas if it were bought in the United States it would cost 240*l*. a ton.

MR. FORSTER, referring in the House of Commons to the Medical Service of the Army, stated that as regards Mesopotamia the War Office has become directly responsible for the medical arrangements in that theatre of war. The general conditions there may now be regarded as satisfactory. During the summer there was necessarily some considerable sickness, but the admission rate has steadily diminished since, and the supply of nurses and medical *personnel* is fully equal at the present time to that at the other fronts. In France, Salonika, and Egypt the general conditions are satisfactory, but in East Africa the authorities have had to contend with a good deal of malaria owing to the exceptionally unhealthy climatic conditions. One of the most remarkable features of the whole campaign is the almost total disappearance of enteric (typhoid) fever. The last weekly returns show that the numbers in hospitals suffering from this disease were: France, four cases; Salonika, nine; Egypt, three; Mesopotamia, eight; total, twenty-four cases. The number of cases of typhoid fever among British troops in France up to November 1 of last year was 1684; paratyphoid, 2534; and indefinite cases, 353; a total of 4571. In the South African War nearly 60,000 cases were admitted into hospital, and there were 8227 deaths; there were thus approximately twice as many *deaths* from typhoid fever in South Africa as there were *cases* in France up to November 1 last. The admission rate for typhoid fever among those who had not been protected by inoculation was fifteen times higher than among those who had been inoculated, and the death-rate was seventy times higher! At home the hospital system has been developed and extended, and the system of utilising the services of the voluntary aid detachments has been highly successful and is much appreciated. Arrangements have been made by which the problem of the treatment and training of the discharged disabled soldiers will be more effectively dealt with. The venereal diseases rate in the Army to-day is no higher than it was in ordinary times of peace, and every effort is being made to reduce the rate still more by the provision of lectures to the troops on the subject in collaboration with the National Council for the Prevention of Venereal Diseases.

THE report of the committee appointed by the Home Secretary to inquire into the social and economic results of the Summer Time Act, 1916, has just been issued (Cd. 8487, price 3*d*.). The committee recommends: 1. That summer time should be renewed in 1917 and in subsequent years. 2. That the period of the operation of summer time should be from the second Sunday in April to the third Sunday in September in each year. 3. That the change from normal to summer time should be made on the night of Saturday–Sunday and the reversion to normal time on the night of Sunday–Monday. 4. That the variation from normal time should be one hour throughout the whole period. The evidence presented by the committee is not of a very substantial kind, but, taking it as a whole, it leads to the conclusion "that the vast preponderance of opinion throughout Great Britain is enthusiastically in favour of summer time, and of its renewal—not only as a war measure, but as a permanent institution." To prevent loss of sleep by children being permitted to stay up beyond their proper bed-time during the long light evenings, it is recommended that all possible steps should be taken by education authorities through the school medical services and the care committees to ensure that this tendency shall be kept within the narrowest possible limits. The opinions of farmers and others concerned with agriculture as to the effects of summer time are more conflicting than those of any other interests; on many farms and in some entire districts (so far as the agricultural community was concerned) the Act was not observed at all. Representatives of the cotton trade complained to tho committee of the inconvenience arising out of the necessity for lighting up the factories in the early morning in the second half of September, and it is partly to meet this objection that the reversion to normal time is to be made at an earlier date this year than last. Sir Napier Shaw informed the committee that a great deal of confusion arose with observers as regards the hours at which meteorological observations were made, and he remarked: "From the scientific point of view the discontinuity of hour introduces a defect which is fatal, and for which there is no remedy." On this matter the committee expresses the hope that the proposal for a permanent acceleration by one hour of the international service of weather reports will receive further consideration.

POLITICAL questions do not often figure in the pages of scientific journals, and the publication in *Science Progress* for January (No. 43) of a leading article, by Mr. W. H. Cowan, M.P., on "Scientific Parliamentary Reform" will undoubtedly arouse considerable discussion. In this article, which treats the present national position from a political point of view, the main issue is largely identical with that urged from the point of view of a man of science in January, 1910, by the late Dr. Johnstone Stoney, F.R.S., in a tract entitled "The Danger which in Our Time Threatens British Liberty." In the past Great Britain, after many struggles, secured a form of representative government that has been adopted as a model by all progressive modern nations But in recent years there has been an ever-growing tendency to subjugate the will of Parliament to the influence of a Cabinet autocracy which, if unchecked, will reduce what professes to be Parliamentary government to the worst form of tyranny. A study of Mr.

Cowan's article will convince the reader that at the present time the average M.P. has practically no opportunity of bringing his capabilities as an independent expert to bear on problems of national importance. Moreover, under the closure, opportunities for discussion are practically nil, except for a handful of members who are able to catch the "Speaker's eye," and the member who attempts to introduce a private Bill will soon find his attempts stifled by Ministerial and other pressure. As for the control of the House of Commons over finance, this is described as an empty boast, untold millions being voted without discussion at the fag-end of an all-night sitting. While not claiming to propose any final cure for this growing disease of bureaucratic tyranny, Mr. Cowan suggests the following possible remedies: Voting by ballot in divisions of the House; shorter Parliaments; an alteration in procedure enabling a Bill dropped in one session to be taken up at the same stage in the next session; and the more controversial proposal of "Home Rule All Round."

The latest issue of the *Victorian Naturalist* to reach us brings the news of the death of Dr. E. P. Ramsay, of Sydney, at the age of seventy-four years. Dr. Ramsay was best known as curator for many years of the Australian Museum, Sydney, and his "Tabular List of Australian Birds" was long the standard index for Australian ornithologists.

A letter lately received from Dr. Ragnar Karsten, leader of the Swedish expedition in Ecuador, is dated El Tena, East Ecuador, October 10, 1916, and states that the expedition was then half-way along the difficult road from Quito to Napo, at which latter place and at Curaray ethnographical studies and collections would be made.

Swedish papers announce the death, on January 23, in his seventy-first year, of Dr. Edward Welander, the leading specialist on skin and venereal diseases. Many of his published investigations deal with the action of mercury. On one occasion he injected a mercurial preparation into his own arm-muscles, and followed its course through the system by a series of X-ray photographs. He fought these diseases also by popular education, and founded a home for the upbringing of children with congenital syphilis, an example followed in other European capitals.

The agricultural institute of Alnarp, Scania, proposes to devote a plot of its land and about 4000*l.* to the erection of a building for studies in heredity, under the direction of H. Nilsson-Ehle, the recently appointed professor at Lund. It will also provide a maintenance grant of 200*l.* per annum. It is felt that such studies are of the greatest importance at this time, when Sweden is thrown on its own resources in the matter of food production, and the institute is convinced that any material sacrifices it may make for this purpose will be more than repaid by the economic results of the research, on which the institute will naturally have the first claim.

The Daimler Company, Ltd., has placed at the disposal of the council of the Institution of Automobile Engineers a sum of money for the provision of an annual premium of 25*l.* to be granted to the graduate submitting the best paper on an appropriate subject in any session. Papers must reach the secretary of the institution, 28 Victoria Street, S.W., during September of each year.

The following have been elected ordinary fellows of the Royal Society of Edinburgh; G. B. Burnside, Dr. B. Cunningham, T. C. Day, R. W. Dron, Prof. A. Gibson, J. Harrison, Prof. J. C. Irvine, A. King, Sir Donald Macalister, Rev. H. C. Macpherson, Lieut. L. W. G. Malcolm, A. E. Maylard, G. F. Merson, F. Phillips, Dr. H. H. Scott, Sir G. A. Smith, Dr. J. Tait, Dr. W. W. Taylor, J. M'Lean Thompson, W. Thorneycroft, and Prof. D. F. Tovey.

We learn from the *Times* that the Reconstruction Committee which was appointed by the late Prime Minister to advise the Government on the many national problems that will arise at the end of the war has now been reconstructed. The Prime Minister will be chairman of this committee. Mr. Lloyd George will, of course, not be able to give continuous attention to the detailed proceedings of the committee, and it is understood that his deputy, on whom the work will fall, will be Mr. Edwin Montagu, the Minister of Munitions in the late Government.

The death is announced, in his ninety-second year, of Mr. James Forrest, honorary secretary, and for many years the secretary, of the Institution of Civil Engineers. The famous "James Forrest" lecture of the institution was endowed by him a few years before his retirement, when a presentation was made to him by the council. His intention was that the lecture should illustrate the dependence of the engineer in his practical professional work on the mathematical and physical sciences. The first lecture was delivered by Dr. W. Anderson in 1893 upon the subject of "The Interdependence of Abstract Science and Engineering," and the whole of the lectures form a very valuable series.

The report of the Philosophical Institute of Canterbury, New Zealand, for the year 1916 records that the council has recognised the importance of furthering the national movement to advance scientific research and extend the application of scientific knowledge. Addresses on "Education and our National Requirements" and "The Importance of Research to Industry and Commerce," by Mr. G. M. Thomson and Prof. T. H. Easterfield respectively, were arranged with these ends in view. In order that matters connected with research and the technical application of science should be constantly watched, the council set up a special committee, with Dr. C. C. Farr as hon. secretary. The New Zealand Board of Industries, having invited the institute to send delegates to confer with the Board on matters affecting post-war reconstruction, the council appointed the president, with Dr. Farr and Dr. Hilgendorf, to act. Application has been made for part of the 250*l.* granted by the Government for research; and investigations are being arranged on the phosphate rocks of Canterbury, the deterioration of apples in cold storage, and the electrical prevention of frosting in orchards.

Sir James J. Dobbie, president of the Institute of Chemistry, referred, in his presidential address to the institute on March 1, to the services of professional chemists in connection with the war. The institute has acted as a chemical clearing-house, assisting public departments and firms engaged on Government work to obtain the chemical service they required. Apart from that, the researches on glass initiated by the institute, particularly the work of Prof. Herbert Jackson, have proved of great value, and have been specially recognised by the President of the Board of Trade. After indicating a number of new industrial developments which call for the help of practical chemists, the president advocated the extension of the training of chemists, particularly in higher physics and physical chemistry, and, therefore, the adoption of a four, instead of a three, years' course. He emphasised the importance of mechanics to chemists who intend to practise in industry, and recommended a training as wide as possible for chemists generally. Dealing with the recent discussions on the subjects of education and the reform of the school curriculum, he criticised what was termed "generalised science," by which he supposed was meant a composite course, including a little physics, a little chemistry, a little biology, and a little of everything else, and suggested that school science should be as simple as possible, and that the first place should be given to mechanics experimentally treated, as being essential to the study of all other experimental science.

Mr. J. W. Ogilvy, secretary of the Microscopical Section of the Young Men's Christian Association, has sent us a copy of the report just issued. The object of this section is to give exhibitions and deliver lectures on microscopical subjects to the troops in the camps and hospitals in the Metropolitan and Home Counties areas; for this purpose sixty-five microscopists have volunteered their services. For the three months October to December, 1916, seventy-three exhibitions have been held and twenty-two lectures delivered, all branches of natural history, together with physiology and pathology, being dealt with. One of the most popular lectures is entitled "Some Huns of the Microscopical World," which treats of some of the disease-producing micro-organisms, and in which the opportunity is taken to refer to syphilis, its causation and spread. There is much evidence among the troops that venereal diseases are spread to a considerable extent through ignorance and thoughtlessness, and an endeavour is being made to enlighten the men upon the subject. These lectures and demonstrations have proved a great success, and it is proposed in the near future to commence a series of Saturday and Sunday afternoon rambles for munition boys.

Mr. A. H. Smith, of the British Museum, contributes to vol. xxxvi., part ii., of the Journal of the Hellenic Society for 1916, an interesting account of the history of the acquisition of the marbles of the Parthenon by Lord Elgin, and of their purchase by the British Government. The late Lord Elgin, on the centenary of the acquisition of this collection by the public, placed in Mr. Smith's hands all his papers bearing on the subject, his desire being that the episode of the marbles should appear in its due proportion in a full biography of his distinguished grandfather, the other aspects of his career being discussed by Sir Harry Wilson, K.C.M.G. We have now a full collection of the original letters and reports dealing with this collection, the glory of the British Museum. An important incident is that of the work of Signor Giovanni Battista Lusieri, by whose efforts, in a large measure, the operations were successfully completed. By an unlucky accident an important collection of drawings and some artistic objects were lost in the wreck of the *Cambrian*, a 48-gun frigate, commanded by Capt. Hamilton, wrecked on the coast of Crete on January 31, 1828. The ship was attacked by pirates, and it was necessary to abandon her at once, without saving even the ship's dog and muster-book, with the large case containing the drawings.

There is happily a very general desire among us that such wild spots as still remain to us in these islands should, so far as possible, be jealously guarded. Thus the announcement in the Press of February 22, to the effect that Sir Thomas Acland had placed some seven or eight thousand acres of Exmoor under the guardianship of the National Trust, will be very welcome. A lease has been granted the trust for the next five hundred years. By arrangement, Sir Thomas and his successors will continue to enjoy the rents and profits and all the ordinary rights and powers of an owner, except that the owner will have no power to develop the land as a building estate.

Prof. E. C. Starks, in the Leland Stanford Junior University Publications, University Series, gives a valuable survey of that extraordinarily variable bone in the mandible of fishes, the sesamoid articular, illustrated by numerous figures. He confirms the opinion of Dr. W. G. Ridewood that it is to be regarded as a sesamoid. Contrary to the views of some earlier investigators, he regards the sesamoid articular as useless as a factor in the classification of groups larger than species, as it often differs within the genus. Nor until much more extensive investigations have been made will it be possible, he considers, to pronounce upon its value in differentiating species.

Among the vast numbers of Brent geese which visit our shores during the winter months a considerable sprinkling occurs of the American form (*Bernicla leucogaster*). Until now it has been supposed that this sub-species occurred with greatest frequency on the Northumberland coast, where, indeed, it appears to be more abundant than the British *B. brenta*; and the same is apparently true in regard to its numbers on the south-east coast of Ireland. While it has been by no means regarded as a rarity in Scotland, it seems possible that further observation may show that it is of far commoner occurrence than was supposed. For the Misses Rintoul and Baxter, in the *Scottish Naturalist* for February, record the fact that an examination of the specimens of Brent geese in the Royal Scottish Museum shows that the large majority belong to the American race.

Sir Frederick Treves, in the *Observer* of February 25, directs attention to the grave results likely to follow from the introduction of the American grey squirrel into Richmond Park. Not only has it driven out our native red squirrel, but it has also now spread beyond the confines of the park into adjoining gardens, working serious damage there. "They eat everything that can be eaten, and destroy twenty times more than they eat." The buds and shoots of young trees, apples, pears, and stone fruits, peas, and strawberries are all laid under a heavy contribution. Already it seems the Office of Works has given orders for the destruction of these pests. The order, however, has come somewhat late, for they have already made their way into the open country of Surrey with a steady persistence and in good force. "When it has reached the fruit-gardens and young plantations of Surrey and Kent, we shall hear more." We are evidently in grave danger of having another very practical lesson in the folly of "acclimatisation," of which the rabbit in Australia forms a familiar and awful example.

All interested in the formation and management of War Food Societies will find useful guidance in Special Leaflet No. 32 of the Board of Agriculture and Fisheries, of which a revised edition is now available. Examples of what has already been done by war food societies and women's institutes since the first issue of the leaflet are now given. It is of interest to note that the Women's Institute at Criccieth, with a membership of about eighty, realised in the first nine months more than 200*l.* by the sale of surplus produce beyond home requirements. Instructions are given as to how a food society or women's institute may be started, and numerous suggestions are made as to the different directions in which their activities may be exercised. Special attention is directed to the powers now conferred upon the Board of Agriculture and Fisheries for securing the use of unoccupied land for purposes of food production.

In view of the difficulty of securing delivery of basic slag, superphosphate, and other phosphatic manures, the President of the Board of Agriculture and Fisheries asks farmers not to apply phosphates to meadows and pastures during the remainder of the present season. All available supplies should be reserved for other crops, especially for roots and potatoes. Having regard to the short supplies, it is not advisable to apply more than three-fourths of the usual dressings of these phosphatic manures, since better results may be expected from the same total weight of manure if the whole area under any particular crop is manured lightly than if a part is heavily dressed and the balance left without artificial manure. This rule applies only where the land is uniform in quality. In those cases in which farmers know that certain fields are poorer than others the manurial treatment must be adapted to the special conditions. Where land in good condition can be given full dressings of farmyard manure, artificial phosphatic manures may often be omitted without materially reducing the crops.

At the meeting of the Society of Glass Technology, held at the University of Sheffield on February 15, some samples of glass manufactured from British sands were exhibited by Mr. C. J. Peddle, but the principal business of the meeting was the discussion of the effect of the temperature at which the annealing of glass is carried out on the time required by the process. Contributions to the discussion were made by Mr. F. Twyman, of Messrs. Adam Hilger, Ltd., London, and by Mr. S. English, of the Glass Technology Department of the University of Sheffield. As the temperature is raised towards the softening point of the glass, the speed at which the internal strains disappear is increased, and the object is to find for each type of glass the highest temperature at which it is safe to carry out the annealing process. The observations are conveniently made on a glass rod mounted between Nicol prisms, so that light passing through the system shows the rings and cross characteristic of a uniaxial crystal. As the annealing proceeds the rings disappear, and the times of disappearance of the last four rings were found in a particular sample of glass to be as follows: At 500° C. 1230 minutes, at 550° C. 50, at 600° C. 20, and at 625° C. 12. These temperatures are all considerably below that of actual softening of the glass.

Vol. xii. of "Contributions from the Jefferson Physical and the Cruft High-tension Electrical Laboratories of Harvard University" for the year 1915 consists of reprints of nineteen papers, the outcome of researches aided financially by the Coolidge fund for research, the Bache fund of the National Academy of Sciences, and the Rumford fund of the American Academy of Arts and Sciences. The volume extends to 400 pages, and is a record of which Harvard may well feel proud. The Cruft laboratory provides two of the nineteen papers—one by Mr. F. Cutting on the design of radiotelegraphic transformers, another by Mr. E. L. Chaffee on coupled circuits. Of the Jefferson laboratory contributions, that of the director, Dr. T. Lyman, is of special interest, as it extends the ultra-violet end of the spectrum to wave-length 600 Ångström units. Dr. P. W. Bridgman's five valuable contributions occupy a large share of the volume, and deal with the effect of great pressures on the temperature and velocity of transition of polymorphic forms of the same substance into each other. Altogether, 150 substances have been examined, and it is unfortunate that the polymorphic diagrams obtained show no tendency to fall into simple types. The subject appears to be very complicated, and Dr. Bridgman suggests that the explanation of the great variety of behaviour of the different substances must be sought in the actual shapes of the atoms.

A copy of the Year-Book of the Scientific and Learned Societies of Great Britain and Ireland, 1916, has been received from Messrs. Charles Griffin and Co., Ltd. This, the thirty-third annual issue of a useful work of reference, contains a record compiled from official sources of the work done in science, literature, and art during the session 1915–16 by numerous societies and Government institutions. The list of societies dealt with is remarkably comprehensive; but the plan of selection is not always clear. Under the section entitled Psychology, for instance, space has been found for particulars of the Nature Study Society and the School Nature Study Union, but nowhere in the volume have we found data concerning the work of, say, the Association of Public-School Science Masters. Similarly, under the section Literature and History, the English Association is included, while the Historical Association is overlooked. The man of science, however, will find the volume as useful as ever in discovering the work done in his particular subject during the year under review. The book is published at *7s. 6d.* net.

An interesting and very full botanical catalogue (New Series, No. 77) has just been issued by Messrs. J. Wheldon and Co., 38 Great Queen Street, W.C. It comprises floras of all countries, and is arranged most conveniently according to the countries dealt with. Many of the works are scarce. We notice that several belonged to the late Sir Joseph Hooker.

Prof. Fraser Harris writes to correct an error made by him in his letter in Nature of January 18 (p. 389) on the introduction of the term "metabolic." He referred to the first edition of Foster's "Text-book of Physiology" as having been published in 1883, whereas it appeared in 1877.

OUR ASTRONOMICAL COLUMN.

Effect of Haze on Solar Rotation Measures.—Attention has previously been directed to Mr. De Lury's suggestion that the apparent variations in the rate of solar rotation, as determined by the spectrographic method at different times, and from different lines, might be accounted for by variations in the haziness of the sky (Nature, vol. xcviii., p. 99). Messrs. St. John and Adams have since made observations to test the possible influence of haze, and have found that to obtain equality of density in photographs of the spectra at points just outside and just within the sun's limb, it was necessary to give exposures in the ratio of 100 to 1. These observers concluded that, under the usual working conditions at Mt. Wilson, scattered radiation is a negligible factor, and is not a probable source of error in the observations of solar rotation (Journ. R.A.S., Canada, vol. x., p. 553). In a further note on the subject (*ibid.*, vol. xi., p. 23) Mr. De Lury points out that the density of a negative is proportional to a power of the time, usually within the range 0·6 to 0·9, and that equal densities with a ratio of 100 in the times of exposure would correspond to a ratio of scattered light to limb light ranging from 6·3 to 1·6 per cent. A probable value would be about 4 per cent., which would produce about half the effect noted in the Mt. Wilson observations, and, allowing